60LT1094-8

AMENDMENTS TO THE CLAIMS

1. (original) A cured composition comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin.

2. (original) The cured composition of claim 1, wherein said flame retardant additive has a bromine content greater than 20%.

3. (original) The cured composition of claim 1, wherein said flame retardant additive is 1,3,5-tris(2,4,6-tribromophenoxy)triazine.

4. (original) The cured composition of claim 1, wherein said flame retardant additive is 2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxy]]bis[4,6-bis[(2,4,6-tribromophenyl)oxy]-1,3,5-triazine].

5. (original) The cured composition of claim 1, wherein said flame retardant additive is soluble in toluene at a concentration of greater than 15 g/100ml of toluene at a temperature of 50° C.

6. (original) The cured composition of claim 1, wherein said epoxy resin is a glycidyl ether resin or a mixture of glycidyl ether resins containing, on average, greater than 2 epoxy groups per molecule.

7. (currently amended) ~~The~~ A cured composition ~~of claim 1,~~ comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms; and wherein said epoxy resin is a mixture of:

(a1) an epoxy resin containing on average less than or equal to 2 glycidyl groups per molecule; and

(a2) an epoxy resin containing greater than 2 glycidyl groups per molecule;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin.

8. (currently amended) ~~The~~ A cured composition ~~of claim 1,~~ comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin has a Tg greater than 120°C.

9. (currently amended) ~~The~~ A cured composition ~~of claim 1,~~ comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin has a dissipation factor of less than 0.010 measured at 1 MHz at room temperature.

10. (original) The cured composition of claim 1, wherein said thermoplastic resin has been directly isolated from solution after polymerization.

11. (original) The cured composition of claim 1, wherein said thermoplastic resin is a poly(phenylene ether).

12. (original) The cured composition of claim 11, wherein said poly(phenylene ether) has a weight average molecular weight ranging from about 3,000 to 35,000 g/mol.

13. (original) The cured composition of claim 11, wherein said poly(phenylene ether) has a weight average molecular weight ranging from about 3,000 to 35,000 g/mol.

14. (original) The cured composition of claim 11, wherein said poly(phenylene ether) has been melt processed at a temperature ranging from about 200° to 350°C.

15. (currently amended) ~~The~~ A cured composition ~~of claim 11,~~ comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin is a poly(phenylene ether); and wherein said poly(phenylene ether) is hydroxy functional.

16. (currently amended) ~~The~~ A cured composition ~~of claim 1,~~ comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin is one or more of a poly(phenylene ether) or a poly(styrene-*co*-maleic anhydride).

17. (currently amended) ~~The~~ A cured composition ~~of claim 1,~~ comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin is a reaction product of a poly(phenylene ether) and a peroxide.

18. (currently amended) ~~The~~ A cured composition ~~of claim 1,~~ comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin is a reaction product of a poly(phenylene ether), a peroxide, and a bisphenol.

19. (currently amended) ~~The~~ A cured composition ~~of claim 1,~~ comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin is a polyimide.

20. (original) The cured composition of claim 1, wherein the curable composition further comprises one or more of an organic reinforcement, an inorganic reinforcement, or a filler.

21. (original) The cured composition of claim 1, wherein the curable composition is essentially free of homopolymers of styrene.

22. (original) The cured composition of claim 1, wherein the epoxy resin is a multifunctional glycidyl ether.

23. (original) The cured composition of claim 22, wherein said multifunctional glycidyl ether is selected from the group consisting of epoxidized phenol-formaldehyde novolacs, epoxidized cresol-formaldehyde novolacs, epoxidized alkylphenol-formaldehyde novolacs, epoxidized 1,1,1-tris(4-hydroxyphenyl)ethane, epoxidized 1,1,2,2-tetra(4-hydroxyphenyl) ethane, epoxidized phenol-dicyclopentadiene novolacs, and epoxidized phenol-benzaldehyde novolacs.

24. (original) A cured composition comprising a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is a glycidyl ether resin or mixture of glycidyl ether resins containing, on average, greater than 2 epoxy groups per molecule;

(b) 1,3,5-tris(2,4,6-tribromophenoxy)triazine and/or 2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxy]]bis[4,6-bis[(2,4,6-tribromophenyl)oxy]-1,3,5-triazine]; and

(c) a poly(phenylene ether) resin.

25. (original) A cured composition comprising a cured residue of a curable composition comprising:

(a) an epoxidized cresol-formaldehyde novolac resin;

(b) 1,3,5-tris(2,4,6-tribromophenoxy)triazine; and

(c) a poly(phenylene ether) resin having a number average molecular weight ranging from about 1,000 to 15,000 g/mol.

26. (original) A laminate, comprising:

a metal foil having a surface; and

disposed on the surface of the metal foil, a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin.

27. (original) The laminate of claim 26, wherein said flame retardant additive has a bromine content greater than 20%.

28. (original) The laminate of claim 26, wherein said flame retardant additive is 1,3,5-tris(2,4,6-tribromophenoxy)triazine.

29. (original) The laminate of claim 26, wherein said flame retardant additive is 2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxy]]bis[4,6-bis[(2,4,6-tribromophenyl)oxy]-1,3,5-triazine].

30. (original) The laminate of claim 26, wherein said epoxy resin is a glycidyl ether resin or a mixture of glycidyl ether resins containing, on average, greater than 2 epoxy groups per molecule.

31. (currently amended) ~~The~~ A laminate ~~of claim 26,~~ comprising:

a metal foil having a surface; and

disposed on the surface of the metal foil, a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin has a Tg greater than 120°C.

32. (currently amended) The A laminate ~~of claim 26,~~ comprising:

a metal foil having a surface; and

disposed on the surface of the metal foil, a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin has a dissipation factor of less than 0.010 measured at 1 MHz at room temperature.

33. (original) The laminate of claim 26, wherein said thermoplastic resin is a poly(phenylene ether).

34. (original) The laminate of claim 33, wherein the poly(phenylene ether) has a number average molecular weight ranging from about 1,000 to 15, 000 g/mol.

35. (original) The laminate of claim 33, wherein the poly(phenylene ether) has a weight average molecular weight ranging from about 3,000 to 35, 000 g/mol.

36. (currently amended) ~~The~~ A laminate ~~of claim 26,~~ comprising:

a metal foil having a surface; and

disposed on the surface of the metal foil, a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin is one or more of poly(phenylene ether) or poly(styrene-*co*-maleic anhydride).

37. (currently amended) The A laminate ~~of claim 26,~~ comprising:

a metal foil having a surface; and

disposed on the surface of the metal foil, a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin is the reaction product of a poly(phenylene ether) and a peroxide.

38. (currently amended) The A laminate of ~~claim 26,~~ comprising:

a metal foil having a surface; and

disposed on the surface of the metal foil, a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin is the reaction product of a poly(phenylene ether), a peroxide, and a bisphenol.

39. (currently amended) ~~The~~ A laminate ~~of claim 26,~~ comprising:

a metal foil having a surface; and

disposed on the surface of the metal foil, a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is essentially free of bromine atoms;

(b) a flame retardant additive essentially free of phenolic groups and of epoxy groups, wherein said flame retardant is a condensation product of (i) a brominated phenol or a mixture of brominated phenols with (ii) a cyanuric halide; and

(c) a thermoplastic resin; wherein said thermoplastic resin is a polyimide.

40. (original) The laminate of claim 26 wherein the curable composition further comprises one or more of an organic reinforcement, an inorganic reinforcement, or a filler.

41. (original) The laminate of claim 26, wherein the curable composition is essentially free of homopolymers of styrene.

42. (original) The laminate of claim 26, wherein the epoxy resin is a multifunctional glycidyl ether.

43. (original) The laminate of claim 42, wherein said multifunctional glycidyl ether is selected from the group consisting of epoxidized phenol-formaldehyde novolacs, epoxidized cresol-formaldehyde novolacs, epoxidized alkylphenol-formaldehyde novolacs, epoxidized 1,1,1-tris(4-hydroxyphenyl)ethane, epoxidized 1,1,2,2-tetra(4-hydroxyphenyl) ethane, epoxidized phenol-dicyclopentadiene novolacs, and epoxidized phenol-benzaldehyde novolacs.

44. (original) A laminate, comprising:

a metal foil having a surface; and

disposed on the surface of the metal foil, a cured residue of a curable composition comprising:

(a) an epoxy resin and curing agent therefor, wherein said epoxy resin is a glycidyl ether resin or mixture of glycidyl ether resins containing, on average, greater than 2 epoxy groups per molecule;

(b) 1,3,5-tris(2,4,6-tribromophenoxy)triazine and/or 2,2'-[(1-methylethylidene)bis[(2,6-dibromo-4,1-phenylene)oxy]]bis[4,6-bis[(2,4,6-tribromophenyl)oxy]-1,3,5-triazine]; and

(c) a poly(phenylene ether) resin.

45. (original) A laminate, comprising:

a metal foil having a surface; and

disposed on the surface of the metal foil, a cured residue of a curable composition comprising:

(a) an epoxidized cresol-formaldehyde novolac resin;

(b) 1,3,5-tris(2,4,6-tribromophenoxy)triazine; and

(c) a poly(phenylene ether) resin having a number average molecular weight ranging from about 1,000 to 15,000 g/mol.